

Descriptions

This is 30V 51A N-CHANNEL MOSFET in PDFN3*3-8L Package.

Features

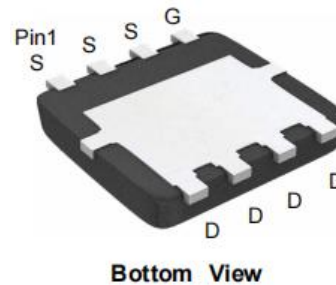
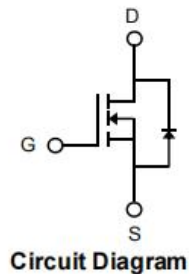
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
30	7.2@ $V_{GS} = 10V$	51
	10.5@ $V_{GS} = 4.5V$	

Applications

- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers

Equivalent Circuit & Pinning



Absolute Maximum Ratings($T_a=25^\circ C$)

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current-Continuous ¹⁾	$T_C=25^\circ C$	I_D	51	A
	$T_C=100^\circ C$		32	
Pulsed Drain Current ²⁾		I_{DM}	200	A
Total Power Dissipation ³⁾		P_D	35.7	W
Avalanche Current ⁴⁾		I_{AS}	33.5	A
Avalanche Energy ⁴⁾		E_{AS}	56	mJ
Thermal Resistance , Junction-case ⁵⁾		$R_{\theta JC}$	6.27	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ⁵⁾		$R_{\theta JA}$	45.6	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

Electrical Characteristic Curve

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.6	2.4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 15A$	-	7.1	8.5	m Ω
		$V_{GS} = 4.5V, I_D = 15A$	-	10.3	15	
Dynamic Characteristics ⁶⁾						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz$	-	1290	-	pF
Output Capacitance	C_{oss}		-	160	-	
Reverse Transfer Capacitance	C_{rss}		-	124	-	
Switching Characteristics ⁶⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 15V, V_{GS} = 10V, R_G = 10\Omega, I_D = 15A$	-	5.5	-	ns
Turn-on Rise Time	t_r		-	13.3	-	
Turn-Off Delay Time	$t_{d(off)}$		-	43	-	
Turn-Off Fall Time	t_f		-	20.5	-	
Total Gate Charge	Q_g	$V_{DS} = 15V, V_{GS} = 10V, I_D = 15A$	-	25.6	-	nC
Gate-Source Charge	Q_{gs}		-	4.0	-	
Gate-Drain Charge	Q_{gd}		-	4.4	-	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	-	2.5	-	Ω
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 0.2A$	-	-	1.2	V

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. Repetitive Rating: Pulse width limited by maximum junction temperature($T_{J_Max}=150^\circ C$).
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. This single-pulse measurement was taken under the following condition ($L=100\mu H, V_{GS}=10V, V_{DS}=50V$) while it's value is limited by $T_{J_Max}=150^\circ C$.
5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
6. Guaranteed by design, not subject to production.

Electrical Characteristic Curve

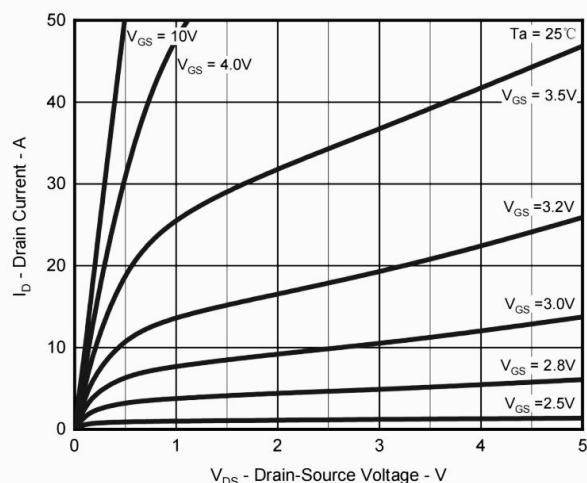


Fig.1 Output Characteristics

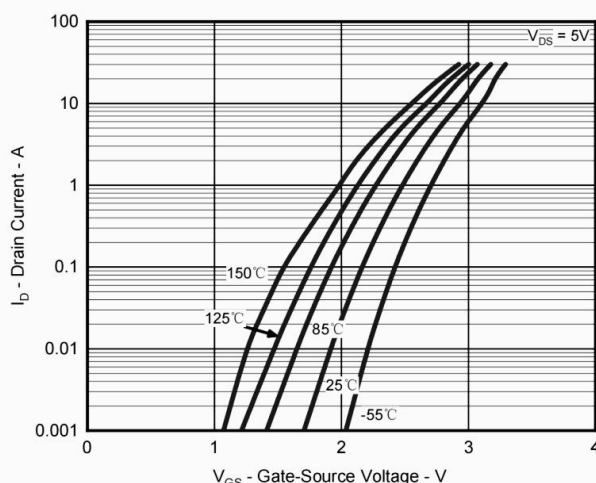


Fig.2 Typical Transfer Characteristic

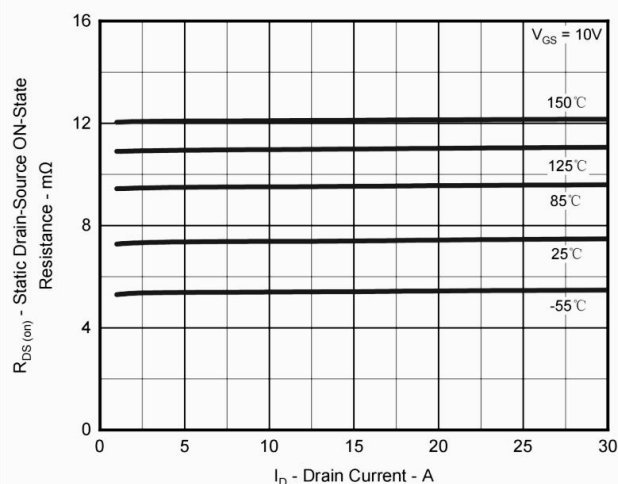


Fig.3 Typical On-Resistance vs Drain Current and Temperature

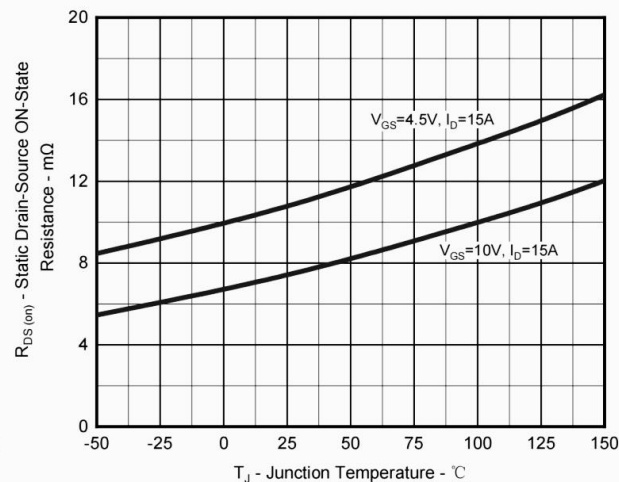


Fig.4 On-Resistance Variation with Temperature

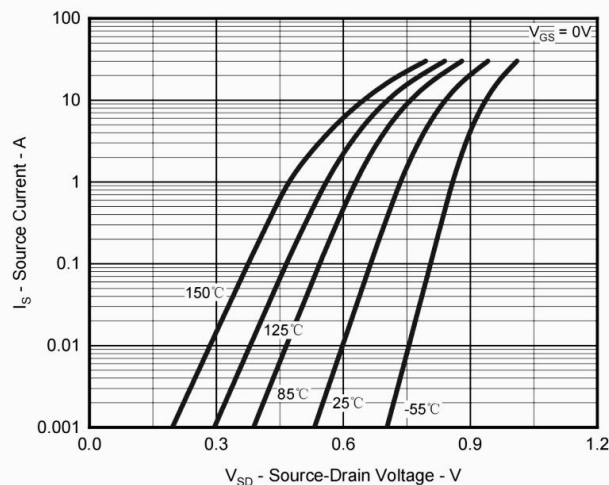


Fig.5 Diode Forward Voltage vs. Current

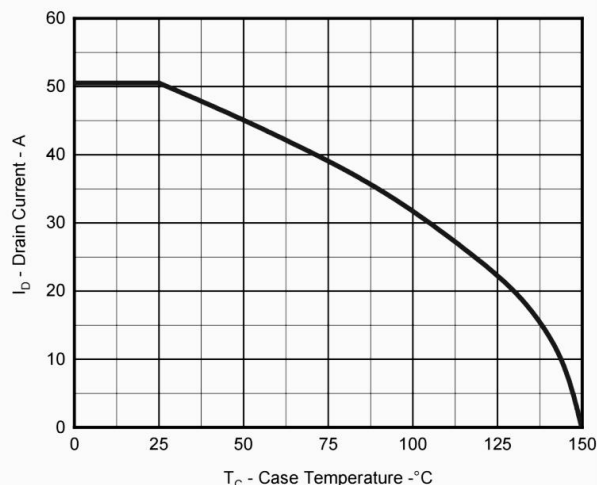
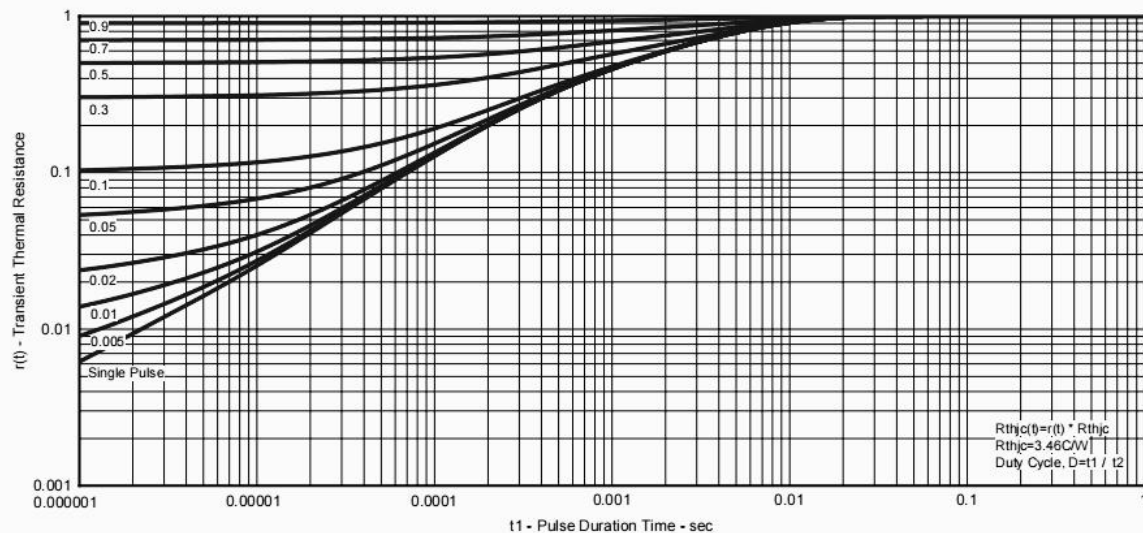
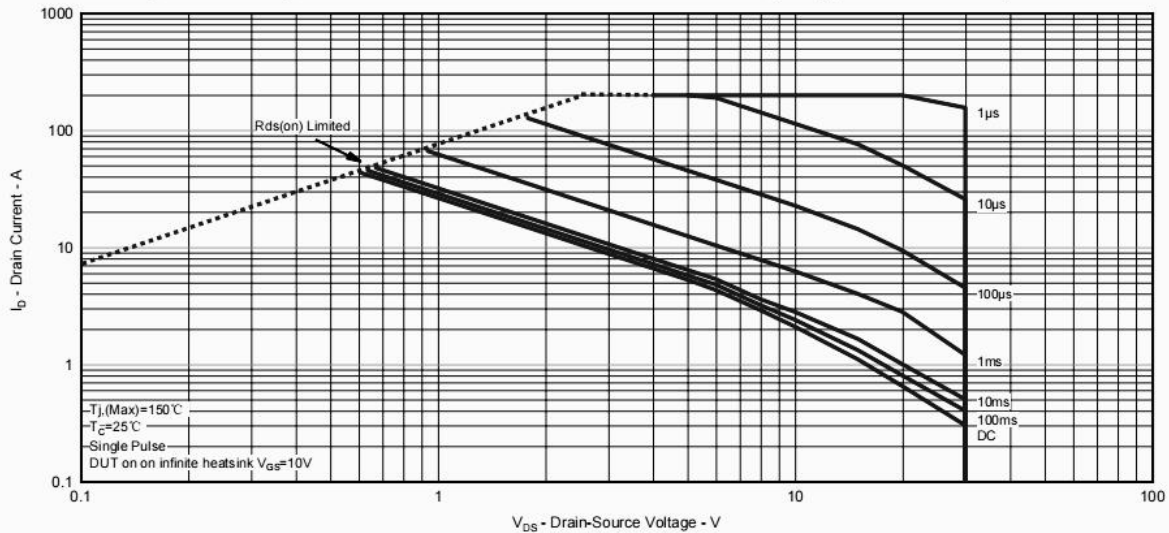
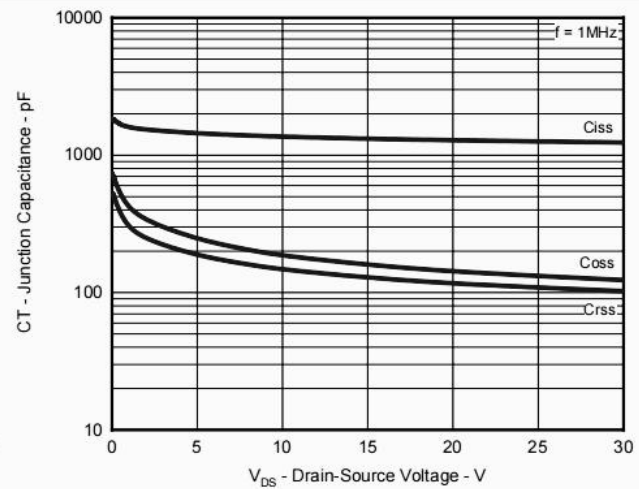
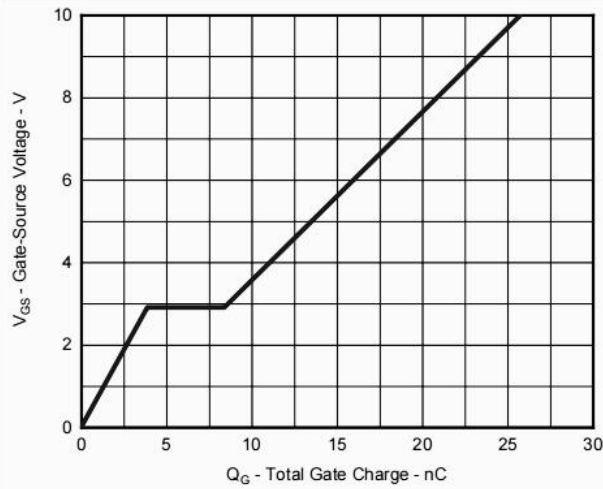
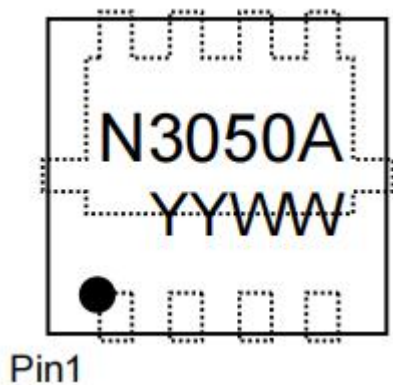


Fig.6 Maximum Drain Current vs. Case Temperature

Electrical Characteristic Curve



Marking Instructions

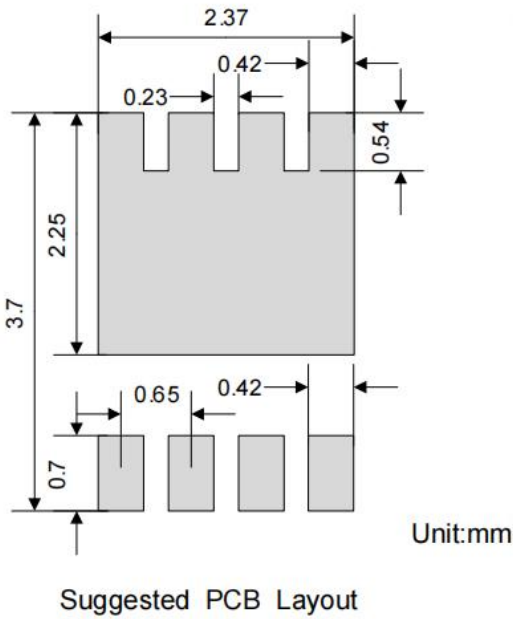
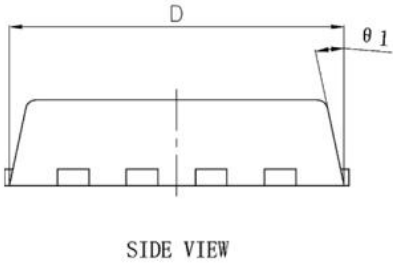
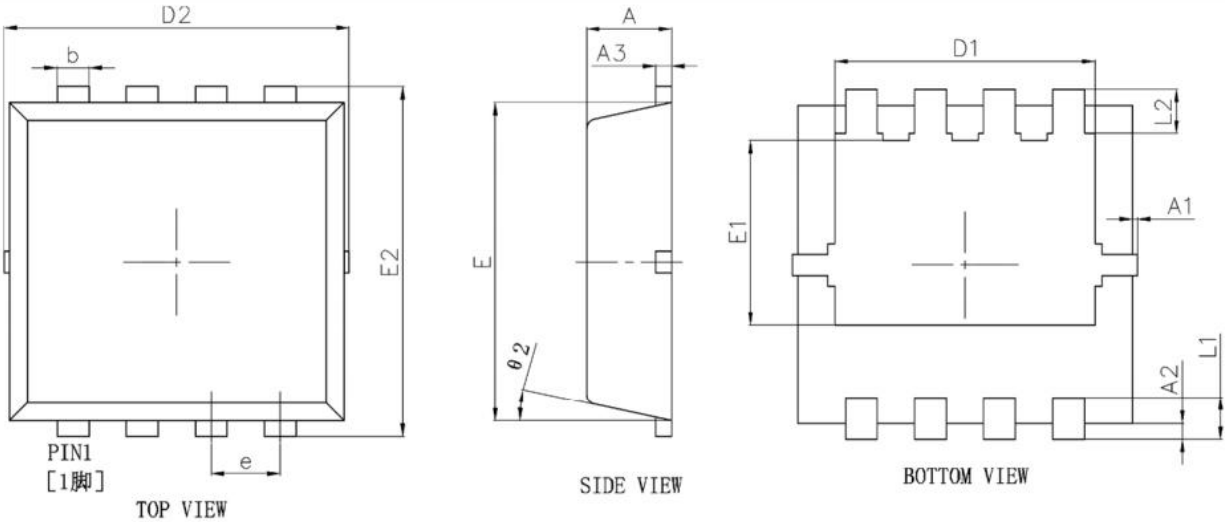


Note:
N3050A: Product Type.

Packaging SPEC

Device	Package	Reel	Shipping
CTCS085N03ZT	PDFN3*3-8L	13"	5000 / Tape & Reel

Package Outline Dimensions



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.75	0.85	0.030	0.033
A1	0.00	0.10	0.000	0.004
A2	0.10	0.20	0.004	0.008
A3	0.152 Ref		0.006 Ref	
D	3.05	3.25	0.120	0.128
D1	2.35	2.55	0.093	0.100
D2	3.20	3.40	0.126	0.134
E	2.90	3.10	0.114	0.122
E1	1.635	1.835	0.064	0.072
E2	3.15	3.35	0.124	0.132
b	0.20	0.40	0.008	0.016
e	0.625	0.675	0.025	0.027
L1	0.35	0.45	0.014	0.018
L2	0.365	0.465	0.014	0.018
$\theta 1$	10°	14°	10°	14°
$\theta 2$	10°	14°	10°	14°

Load With Information

